

CLAIMS

1. A process of recovering platinum group metals (PGMs) from a pregnant solution or leachate containing PGM values and base metals, the process including the steps of:
 - a) non-selective precipitation of the PGM values and base metals to form an insoluble precipitate comprising the PGM values and base metals;
 - b) selective leaching of the precipitate to form (i) a leach solution containing the base metals and a residue containing the PGM values, or (ii) a leach solution containing the base metals and PGM values and a depleted residue; and
 - c) recovery of the base metals from the leach solution of b)(i) or b)(ii) and recovery of the PGM values from the residue of b)(i) or the leach solution of b)(ii), depending on the selective leaching in step b).
2. A process according to claim 1, wherein the pregnant solution or leachate containing the PGM values and base metals is a cyanide solution or leachate.
3. A process according to claim 1 or claim 2, wherein the non-selective precipitation of the PGM values and base metals in step a) is carried out by controlled reduction of the pH of the pregnant solution or leachate to within the range of about 0 to about 5
4. A process according to claim 3, wherein the pH of the pregnant solution or leachate is reduced to within the range of about 1 to about 3.
5. A process according to claim 4, wherein the pH of the pregnant solution or leachate is reduced to about 2.

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6. A process according to any one of claims 1 to 5, wherein the selective leaching in step b) is a pressure leaching step in which the PGM values remain in the residue.
7. A process according to claim 6, wherein the PGM values are recovered from the residue by a fusion step or a further leach step to produce a concentrate rich in PGM values.
8. A process according to claim 6, wherein the pressure leaching step is conducted by first carrying out a caustic leach followed by an acid leach.
9. A process according to claim 8, wherein the PGM values are recovered from the residue by a reduction leach step to produce a high grade PGM concentrate.
10. A process according to any one of claims 1 to 5, wherein the insoluble precipitate of step a) is fumed with acid, followed by selective leaching to form a leach solution containing both the PGM values as anions and the base metals as cations, and recovery of the PGM values on an ion exchange resin.
11. A process according to claim 10, wherein the resin is incinerated to form an ash rich in PGM values or eluted to recover the PGM values.
12. A process according to any one of claims 1 to 5, wherein the insoluble precipitate of step a) is first calcined and then selectively leached to remove the base metals, producing a PGM rich residue or concentrate.
13. A process according to any one of claims 1 to 12, wherein the base metals are recovered from the leach solution of b)(i) or b)(ii) by precipitation.
14. A process according to any one of claims 1 to 13, wherein any PGM values remaining in solution after the non-selective precipitation in step a) may be recovered by passing the solution through an ion exchange resin.

15. A process according to claim 14, wherein the resin is incinerated to form an ash rich in PGM values or eluted to recover the PGM values.
16. A process according to claim 1, substantially as herein described with reference to any one of the illustrated embodiments.
17. A process according to claim 1, substantially as herein described with reference to any one of the illustrative Examples.